Amendments to the Claims

Please cancel Claims 1-15. Please amend Claims 16 and 17. Please add new Claims 22-39. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1-15. (Canceled)

16. (Withdrawn-currently amended) A primer for distinguishing between rice varieties, wherein the primer is

(a) an oligonucleotide for amplification of a DNA region comprising a nucleotide in a position of any of the following (1) to (28) ~~of claim 1~~ in the rice genome, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position, or

(b) an oligonucleotide comprising a nucleotide sequence complementary to a sequence covering up to a nucleotide adjacent to a position of any of the following (1) to (28) ~~of claim 1~~ in the rice genome, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position[[.]]:

(1) position 593 in the nucleotide sequence of SEQ ID NO: 1,
(2) position 304 in the nucleotide sequence of SEQ ID NO: 2,
(3) position 450 in the nucleotide sequence of SEQ ID NO: 3,
(4) position 377 in the nucleotide sequence of SEQ ID NO: 4,
(5) position 163 in the nucleotide sequence of SEQ ID NO: 5,
(6) position 624 in the nucleotide sequence of SEQ ID NO: 6,
(7) position 534 in the nucleotide sequence of SEQ ID NO: 7,
(8) position 358 in the nucleotide sequence of SEQ ID NO: 8,
(9) position 475 in the nucleotide sequence of SEQ ID NO: 9,
(10) position 323 in the nucleotide sequence of SEQ ID NO: 10,
(11) position 612 in the nucleotide sequence of SEQ ID NO: 11,
(12) position 765 in the nucleotide sequence of SEQ ID NO: 12,

(13) position 571 in the nucleotide sequence of SEQ ID NO: 13,

(14) position 660 in the nucleotide sequence of SEQ ID NO: 14,

(15) position 223 in the nucleotide sequence of SEQ ID NO: 15,

(16) position 247 in the nucleotide sequence of SEQ ID NO: 16,

(17) position 163 in the nucleotide sequence of SEQ ID NO: 17,

(18) position 421 in the nucleotide sequence of SEQ ID NO: 18,

(19) position 178 in the nucleotide sequence of SEQ ID NO: 19,

(20) position 141 in the nucleotide sequence of SEQ ID NO: 20,

(21) position 480 in the nucleotide sequence of SEQ ID NO: 21,

(22) position 481 in the nucleotide sequence of SEQ ID NO: 22,

(23) position 131 in the nucleotide sequence of SEQ ID NO: 23,

(24) position 510 in the nucleotide sequence of SEQ ID NO: 24,

(25) position 248 in the nucleotide sequence of SEQ ID NO: 25,

(26) position 92 in the nucleotide sequence of SEQ ID NO: 26,

(27) position 743 in the nucleotide sequence of SEQ ID NO: 27, and

(28) position 552 in the nucleotide sequence of SEQ ID NO: 28.

17. (Withdrawn-currently amended) An oligonucleotide for distinguishing between rice varieties, wherein the oligonucleotide hybridizes with a DNA region comprising a nucleotide in a position of any of the following (1) to (28) ~~of claim 1~~, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position, comprising at least 15 nucleotides[[.]]:

(1) position 593 in the nucleotide sequence of SEQ ID NO: 1,

(2) position 304 in the nucleotide sequence of SEQ ID NO: 2,

(3) position 450 in the nucleotide sequence of SEQ ID NO: 3,

(4) position 377 in the nucleotide sequence of SEQ ID NO: 4,

(5) position 163 in the nucleotide sequence of SEQ ID NO: 5,

(6) position 624 in the nucleotide sequence of SEQ ID NO: 6,

(7) position 534 in the nucleotide sequence of SEQ ID NO: 7,

(8) position 358 in the nucleotide sequence of SEQ ID NO: 8,

(9) position 475 in the nucleotide sequence of SEQ ID NO: 9,

(10) position 323 in the nucleotide sequence of SEQ ID NO: 10,
(11) position 612 in the nucleotide sequence of SEQ ID NO: 11,
(12) position 765 in the nucleotide sequence of SEQ ID NO: 12,
(13) position 571 in the nucleotide sequence of SEQ ID NO: 13,
(14) position 660 in the nucleotide sequence of SEQ ID NO: 14,
(15) position 223 in the nucleotide sequence of SEQ ID NO: 15,
(16) position 247 in the nucleotide sequence of SEQ ID NO: 16,
(17) position 163 in the nucleotide sequence of SEQ ID NO: 17,
(18) position 421 in the nucleotide sequence of SEQ ID NO: 18,
(19) position 178 in the nucleotide sequence of SEQ ID NO: 19,
(20) position 141 in the nucleotide sequence of SEQ ID NO: 20,
(21) position 480 in the nucleotide sequence of SEQ ID NO: 21,
(22) position 481 in the nucleotide sequence of SEQ ID NO: 22,
(23) position 131 in the nucleotide sequence of SEQ ID NO: 23,
(24) position 510 in the nucleotide sequence of SEQ ID NO: 24,
(25) position 248 in the nucleotide sequence of SEQ ID NO: 25,
(26) position 92 in the nucleotide sequence of SEQ ID NO: 26,
(27) position 743 in the nucleotide sequence of SEQ ID NO: 27, and
(28) position 552 in the nucleotide sequence of SEQ ID NO: 28.

18. (Withdrawn) A kit for distinguishing between rice varieties, comprising the oligonucleotide of claim 17.

19. (Withdrawn) The kit of claim 18, further comprising an alkaline aqueous solvent.

20. (Withdrawn) A kit for distinguishing between rice varieties, comprising the primer of claim 16.

21. (Withdrawn) The kit of claim 20, further comprising an alkaline aqueous solvent.

22. (New) A method of distinguishing a test rice from one or more rice varieties, said method comprising:

(a) determining in the genome of the test rice, the nucleotide at one or more single nucleotide polymorphism (SNP) markers, or the nucleotide that composes a base pair with the nucleotide at the one or more SNP markers, or both; and

(b) comparing the nucleotide at the one or more SNP markers or the nucleotide that composes a base pair with the nucleotide at the one or more SNP markers in the genome of the test rice determined in step (a) with the nucleotide at the one or more SNP markers or the nucleotide that composes a base pair with the nucleotide at the one or more SNP markers in the genome of the one or more rice varieties,

wherein the one or more rice varieties are selected from the group consisting of the rice varieties as set forth in Table 1, and the one or more SNP markers are selected from the group consisting of the SNP markers as set forth in Table 1.

23. (New) The method of Claim 22, wherein the test rice is of a variety selected from the group consisting of the rice varieties as set forth in Table 1.

24. (New) The method of Claim 23, wherein the test rice is distinguished from all other rice varieties as set forth in Table 1, thereby identifying the variety of the test rice.

25. (New) The method of Claim 24, wherein the variety of the test rice is identified as Koshihikari, Hitomebore or Akitakomachi.

26. (New) The method of Claim 24, wherein the variety of the test rice is identified as Koshihikari.

27. (New) The method of claim 22, further comprising the following steps (a) to (c):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both, and

(c) determining the nucleotide sequence of the amplified DNA.

28. (New) The method of claim 22, further comprising the following steps (a) to (d):

(a) preparing DNA from the test rice,

(b) digesting the prepared DNA into fragments with a restriction enzyme,

(c) fractionating the digested DNA fragments by size, and

(d) comparing the size of the fractionated DNA fragments with a control.

29. (New) The method of claim 22, further comprising the following steps (a) to (e):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) digesting the prepared DNA into fragments with a restriction enzyme,

(d) fractionating the digested DNA fragments by size, and

(e) comparing the size of the fractionated DNA fragments with a control.

30. (New) The method of claim 22, further comprising the following steps (a) to (e):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) denaturing the amplified DNA into single-stranded DNA,

(d) fractionating the denatured single-stranded DNA on a non-denaturing gel, and

(e) comparing the mobility of the fractionated single-stranded DNA on the gel with a control.

31. (New) The method of claim 22, further comprising the following steps (a) to (f):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, synthesizing an oligonucleotide probe labeled with a reporter fluorescence dye and a quencher fluorescence dye, wherein the probe is complementary to a nucleotide sequence near the SNP marker, or is complementary to the reverse complement sequence of the nucleotide sequence near the SNP marker,

(c) hybridizing the DNA prepared in step (a) with the probe synthesized in step (b),

(d) amplifying a DNA comprising the nucleotide sequence near the SNP marker or its reverse complement sequence, or both,

(e) detecting emission of reporter fluorescence, and

(f) comparing the emission of reporter fluorescence detected in step (e) with a control.

32. (New) The method of claim 22, further comprising the following steps (a) to (h):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, synthesizing a probe comprising a 5' region and a 3' region, the 3' region complementary to a nucleotide sequence comprising the nucleotide at the SNP marker and a 5'-flanking sequence thereof, or the nucleotide that composes a base pair with the nucleotide at the SNP marker and a 5'-flanking sequence thereof, and the 5' region comprising an unrelated sequence;

(c) synthesizing a probe that is complementary to a nucleotide sequence comprising the nucleotide at the SNP marker and a 3'-flanking sequence thereof, or the nucleotide that composes a base pair with the nucleotide at the SNP marker and a 3'-flanking sequence thereof,

(d) hybridizing the probes synthesized in steps (b) and (c) with the DNA prepared in step (a),

(e) digesting the hybridized DNA in step (d) with a single-stranded DNA cleaving enzyme, and dissociating a part of the probe synthesized in step (b),

(f) hybridizing the part of the probe dissociated in step (e) with a probe for detection,

(g) enzymatically digesting the hybridized probe in step (f), and measuring fluorescence intensity thus generated, and

(h) comparing the fluorescence intensity measured in step (g) with a control.

33. (New) The method of claim 22, further comprising the following steps (a) to (f):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) denaturing the amplified DNA into single-stranded DNAs,

(d) separating only one strand from the denatured single-stranded DNAs,

(e) performing an elongation reaction from a position near that of the SNP marker, wherein the reaction elongates one nucleotide at a time, then enzymatically illuminating the generated pyrophosphate, and measuring the intensity of the illumination, and

(f) comparing the intensity measured in step (e) with a control.

34. (New) The method of claim 22, further comprising the following steps (a) to (f):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) synthesizing a primer complementary to a nucleotide sequence comprising a sequence covering up to a nucleotide adjacent to the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker,

(d) performing a single nucleotide extension reaction in the presence of fluorescently labeled nucleotides, using the DNA amplified in step (b) as a template, and the primer synthesized in step (c),

(e) measuring fluorescence polarization, and

(f) comparing the fluorescence polarization measured in step (e) with a control.

35. (New) The method of claim 22, further comprising the following steps (a) to (f):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) synthesizing a primer complementary to a nucleotide sequence comprising a sequence covering up to the nucleotide adjacent to the nucleotide at the SNP marker, or to the nucleotide that composes a base pair with the nucleotide at the SNP marker,

(d) performing a single nucleotide extension reaction in the presence of fluorescently labeled nucleotides, using the DNA amplified in step (b) as a template, and the primer synthesized in step (c),

(e) determining the nucleotide variety used in the reaction of step (d) using a sequencer, and

(f) comparing the nucleotide variety determined in step (e) with a control.

36. (New) The method of claim 22, further comprising the following steps (a) to (d):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) measuring the molecular weight of the DNA amplified in step (b) using a mass spectrometer, and

(d) comparing the molecular weight measured in step (c) with a control.

37. (New) The method of claim 22, further comprising the following steps (a) to (f):

(a) preparing DNA from the test rice,

(b) for each of the one or more SNP markers, amplifying a DNA comprising the nucleotide at the SNP marker, or the nucleotide that composes a base pair with the nucleotide at the SNP marker, or both,

(c) providing a substratum on which a nucleotide probe is immobilized,

(d) contacting the DNA of step (b) with the substratum of step (c),

(e) detecting the strength of hybridization between the DNA and the nucleotide probe immobilized on the substratum, and

(f) comparing the strength detected in step (e) with a control.

38. (New) The method of claim 22, further comprising the following steps (a) and (b):

(a) disrupting a rice seed in an alkaline aqueous solvent, and

(b) extracting rice genomic DNA from the seed disrupted in step (a).

39. (New) The method of claim 38, wherein the rice seed is polished.